U.S. NUCLEAR REGULATORY COMMISSION

REGION I

Report Nos.:	92-22 92-25
Docket Nos.:	50-220 50-410
License Nos.:	DPR-63 NPF-69
Licensee:	Niagara Mohawk Power Corporation 301 Plainfield Road Syracuse, New York 13212
Facility:	Nine Mile Point, Units 1 and 2
Location:	Scriba, New York
Dates:	August 16 through September 26, 1992
Inspectors:	W. L. Schmidt, Senior Resident Inspector R. A. Laura, Resident Inspector W. F. Mattingly, Resident Inspector (in training) C. D. Beardslee, Reactor Inspector, Intern J. E. Menning, Project Manager, NRR
Approved by:	Larry E. Nicholson, Chief Reactor Projects Section No. 1A Division of Reactor Projects

10/21/92
Date

<u>Inspection Summary</u>: This inspection report documents routine and reactive inspections of plant operations, radiological controls, maintenance, surveillance, emergency planning, security, and safety assessment/quality verification activities.

<u>Results</u>: See Executive Summary.

EXECUTIVE SUMMARY

Nine Mile Point Units 1 and 2

NRC Region I Inspection Report Nos. 50-220/92-22 & 50-410/92-25

August 16, 1992 - September 26, 1992

Plant Operations

The Niagara Mohawk Power Corporation (NMPC) safely conducted power operation at Nine Mile Point Unit 1 (Unit 1) over the period. In response to an overheated generator output switch and to a leak in a feedwater flow venturi line, the operators placed the unit in a safe condition to allow for repairs. In each case, repairs were made and the unit was returned to rated power in a safe and controlled manner. A station shift supervisor showed a good questioning attitude by identifying damage to a core spray test valve. Unit 2 was operated safely during this period. However, a reactor scram due to a repeated failure of operators to understand the affects of their actions on the condensate and feed system occurred. This will remain as an unresolved item pending further review of action taken by NMPC to prevent recurrence. Operators responded very well to a partial loss of off-site power. However, this was the fourth time within two years that an off-site power line was lost; the ability of NMPC to adequately control these power supplies is an unresolved item.

Radiological Controls

A new radiation work permit program was implemented this period which more closely tracks personnel radiation exposure. The Unit 2 reactor building drain system overflowed and resulted in a significant spread of contamination.

Maintenance and Surveillance

Unit 1 and Unit 2 maintenance personnel performed well during routine maintenance and surveillance activities. Particularly noteworthy at Unit 1 was the prompt and effective repair of the feedwater line flow venturi low pressure pipe leak.

Engineering and Technical Support

A review of the temperature data from the emergency cooling system condensate return lines showed only small amounts of thermal cycling. NMPC continued to implement enhanced leak rate testing of the Unit 2 resilient seat primary containment vent and purge valves.

Executive Summary

Safety Assessment/Quality Verification

Several licensee event reports were reviewed and found satisfactory. Unit 1 operations performed a high quality evaluation of recent problems with equipment configuration control and implemented appropriate corrective actions. 10 CFR 50.59 safety evaluations and the work control monitoring program were reviewed and found properly implemented.

TABLE OF CONTENTS

TABLE OF CONTENTS (CONT'D)

NOTE: The NRC inspection manual procedure or temporary instruction that was used as inspection guidance is listed for each applicable report section.

DETAILS

1.0 SUMMARY OF FACILITY ACTIVITIES

1.1 Niagara Mohawk Power Corporation Activities

The Niagara Mohawk Power Corporation (NMPC) safely conducted activities at Nine Mile Point Unit 1 (Unit 1) over the period. The generator was removed from and returned to the grid on August 29 to allow repairs to an overheating generator output disconnect switch. On September 2 the unit was brought to cold shutdown to repair a steam leak from a feedwater flow venturi. NMPC restarted the unit on September 4 and operated at power through the end of the period.

NMPC safely conducted activities at Nine Mile Point Unit 2 (Unit 2) throughout the period. On August 22 while swapping feedwater pumps, at 55% power, feedwater flow to the reactor vessel was lost, and the reactor scrammed on low reactor vessel water level. Unit 2 restarted on August 24 and operated at low power on the turbine bypass valves for several days while troubleshooting a recirculation loop B flow control valve position control problem. To allow the unit to continue the power ascension while troubleshooting, single recirculation loop operation (SLO) commenced on August 28. Subsequently, management directed that the unit be brought to cold shutdown following damage to the turbine generator exciter housing and bearings, during a normal turbine startup. NMPC found that the damage had been caused by unanticipated turbine foundation growth, which caused improper axial alignment of the exciter components. Power operations were resumed on September 10 and continued through the remainder of the report period. On September 11, Unit 2 again conducted SLO for about six hours to troubleshoot a recirculation pump fast speed breaker problem. On September 25, off-site power line 5 was lost as a result of a ground caused by work under the transmission line.

1.2 NRC Activities

Resident inspectors conducted inspection activities during normal, backshift and weekend hours over this period. There were 10 hours of backshift (evening shift) and 23 hours of deep backshift (weekend, holiday, and midnight shift) inspection during this period.

-- During the week of August 31 a Region I specialist inspector conducted a routine review of radiation protection at both units. The findings of this inspection will be documented in Combined Inspection Report 220/92-21 and 410/92-24.

-- During the week of August 31 two Region I specialist inspectors conducted a routine review of radiochemistry. The findings of this inspection will be documented in Combined Inspection Report 220/92-23 and 410/92-26.

-- On September 16, 1992, the NRC conducted a systemmatic assessment of licensee performance (SALP) management meeting with NMPC at the training center. At this meeting, the NRC presented their performance assessment of NMPC's operation of Units 1 and 2 from April 1991 through May 1992. NMPC was provided an opportunity to discuss their perspective on the SALP.

-- During the week of September 14 Region I specialist inspectors conducted a review of the open items associated with the August 1991 Site Area Emergency event at Unit 2. The results of this inspection will be documented in Inspection Report 410/92-27.

2.0 PLANT OPERATIONS (71707,93702)

2.1 Plant Operations Review - Unit 1

Plant management and the operations department properly assessed and responded to the degradation of non-safety related equipment, including a feedwater flow venturi steam leak and an overheating generator output disconnect switch. The operations crews professionally responded to management direction and placed the unit safely in the required conditions to allow repairs. Further, a station shift supervisor identified during a plant tour, that the loop 12 core spray (CS) test valve was damaged because two of the four valve yoke bolts were missing. Operators conducted control room activities well, including panel manipulations and operator response to alarms.

2.1.1 Proper Response to Equipment Degradation and Damage

Through plant tours and thermographic examination, NMPC personnel were able to identify and correct two degraded conditions and equipment damage to a safety related valve. NMPC management showed good safety perspective, took very good action to assess the conditions, developed good repair plans, and as necessary directed operators to place the plant in conditions to allow repairs.

During a plant walkdown a system engineer identified a steam leak at the threaded connection to the low pressure tap on the No. 12 feedwater flow venturi. Plant staff closely monitored the leakage until September 2, when the leakage worsened rapidly. Plant management directed the shutdown of the unit to facilitate repairs. The pipe connection was repaired and the unit returned to power on September 4.

During a routine monthly thermographic inspection of switchyard breakers and switches performed on August 27, an inservice testing (ISI) technician identified that the generator output center phase manual disconnect switch had unusual hot spots. The switch was found 130°F above ambient, 120°F greater than the previous months reading. On August 29 operators lowered reactor power and removed the generator from the grid. Contacts inside the switch were pitted and corroded causing increased resistance. The switch was refurbished, the generator placed back on the grid, and the unit returned to rated power. The thermographic inspections have been used over the last year to identify and correct hot spots in switch gear before failure occurred.

During a routine plant tour a station shift supervisor identified that the loop 12 core spray test valve had been damaged during recent surveillance testing. Specifically, two of the four bolts holding the valve yoke to the bonnet were missing. When the valve was closed, the force of the operator and the missing bolts caused the valve stem to be bent. NMPC management took appropriate actions to close the throttle valve on the torus side of the test valve to provide additional isolation and to initiate a root cause determination. Further, engineering reviewed the situation and determined that the test valve had shut. The inspector verified that the test valve was not necessary for the continued operability of the system.

2.2 Plant Operations Review - Unit 2

NMPC safely operated and conducted shutdown activities, at Unit 2, in conformance with approved procedures and regulatory requirements. Operators generally conducted activities well including: shift turnovers and crew briefings, panel manipulations, emergency operating procedure use, and response to alarms. However, operator knowledge weaknesses in the condensate and feedwater system resulted in a reactor scram. The inspector conducted regular tours of the plant to assess: equipment conditions, radiological conditions, fire protection, security, general housekeeping practices, and personnel safety. No notable strengths or weakness were observed during these tours.

2.2.1 Automatic Reactor Scram Due to Personnel Error

On August 22, an operating crew placed the feedwater system in a lineup which caused the condensate system to be unable to supply the feedwater pumps (FWPs) with adequate water flow. As such, the FWP maintaining the reactor vessel water level tripped on low suction pressure, causing an automatic reactor scram on a valid low level signal. The scram occurred from 55% power during a planned rotation of operating FWPs. Operators performed well following the scram and maintained the unit in a safe condition. However, inspector and NMPC review of this event indicated that the scram could have been avoided had NMPC taken action to increase the operator knowledge of the condensate and feedwater system following a similar reactor scram on December 12, 1991. The circumstances leading to both scrams demonstrated weaknesses in the integrated operational knowledge of the condensate and feedwater systems by the operators. NMPC had not taken appropriate action to address the knowledge deficiency with operating crews who were not involved in the December 1991

scram because they considered the deficiency was limited to the licensed operators involved in that scram.

A description of the August 22 event follows: Operators reduced power from 100% to 55% to allow the starting of FWP A and the securing of FWP 1C for corrective maintenance on the mechanical pump seals. Prior to starting FWP 1A, FWPs 1B and 1C were supplying about 17,000 gpm and controlling reactor vessel water level. By procedure three condensate and three condensate booster pumps were running, supplying about 14,000 gpm to the suction of the FWPs. In addition, approximately 3,000 gpm was being supplied to the FWPs from the 4th point heater drain pumps.

According to procedures operators started FWP 1A, with its discharge valve shut, to allow lube oil warm up before placing it in service. By design the minimum flow valve for FWP 1A opened allowing about 8,000 gpm to recirculate to the condenser for pump protection. This increased the total feedwater system flow to approximately 21,500 gpm, or about 90% of system capability. Shortly after this two of three heater drain pumps tripped due to low level in their respective fourth point heaters. This placed an additional load on the condensate system, increasing it to about 23,500 gpm, near system capacity.

This transient was within the recovery capability of the condensate system, however, this was not immediately obvious to the operators due to a perceived sense of urgency felt because of observed hotwell level oscillations. The operators wanted to reduce load on the condensate system. They discussed loading FWP 1A or unloading FWP 1C. Since FWP 1A lube oil was below the temperature required by procedure for loading, and the desire was to secure FWP 1C, they decided that unloading this pump was the best alternative.

Operators took manual control and began to shut the FWP 1C discharge level control valve, which caused: 1) FWP 1B flowrate to increase to compensate for the lowering flow from FWP 1C and 2) FWP 1C minimum flow control valve to open causing an additional 8,000 gpm to be recirculated to the condenser. The net effect of FWPs 1A and 1C running at minimum flow and FWP 1B maintaining vessel level was that the condensate system was loaded beyond its design capability. This caused a low suction pressure trip of an operating booster pump, followed by the low suction pressure trip of FWP 1B.

With the tripping of FWP 1B the reactor vessel was no longer being supplied with feedwater. Operators immediately took actions but could not feed the reactor vessel with FWP 1A before the level decreased to the low reactor vessel water level (Level 3, 159.3 inches, 174 inches above the top of active fuel) scram setpoint.

Following the scram all systems functioned as required. Reactor vessel water level was promptly recovered using FWP 1A, and the reactor core isolation cooling system (RCIC) was not called upon to inject automatically. Due to relatively low decay heat levels, the main steam isolation valves were shut to minimize the cooldown rate. Operators properly placed RCIC in service for vessel level control and the safety relief valves were cycled for vessel

pressure control. The inspectors observed the latter stages of the scram recovery and determined that the operator had responded properly to the scram.

The inspector independently reviewed the data collected during the event, interviewed several operators involved, and attended the post-scram review and site operations review committee pre-start meetings. The inspector reviewed the circumstances involved in the December 12, 1991 reactor scram on low reactor vessel water level, because its similarity to this event. The inspector concluded that operator action resulted in inadequate suction pressures to FWPs. NMPC submitted licensee event report (LER) 92-17 dated September 21, 1992, which adequately described and analyzed the August 22 event. Based on this review the inspector concluded, as did NMPC in the LER, that NMPC review of the December 1991 scram had not identified and corrected the operations staff's knowledge deficiency with the feedwater and condensate system design.

The inspector observed pre-startup discussions of the event and found them acceptable. In LER 92-17 NMPC stated that additional training, classroom and simulator, on the operation of the condensate and feed system would be given to the operating crews. The inspector attended the classroom training conducted with one crew. The training material was well presented and provided the operators with adequate information on the operation of the systems. However, the failure to address the knowledge deficiency prior to the August 22 scram remained a concern. This issue and the actions taken by NMPC to prevent any further inadequate corrective action remained unresolved. (410/92-25-01)

2.2.2 Partial Loss of Off-site Power Line 5

The control room operators performed well following the partial loss of offsite power (115KV line 5) that occurred on September 25, 1992. The line was lost because of construction work being performed with a crane under the line 5 transmission lines, within the protected area. While pouring concrete from a suspended bucket the crane's boom came too close to the 115 KV line causing an arc and tripping of the off-site feeder breaker. Three individuals directing the movement of the concrete bucket were injured as a result of the arcing to the boom and subsequent current flow through the crane's wires and the bucket to the ground. The individuals were treated and released from the local hospital.

The Division I and III emergency diesel generators (EDGs) successfully started and powered their safety busses following the sensed loss of voltage. The inspector observed that operators took appropriate action, according to approved procedures, to verify that line 5 could be restored and subsequently paralleled the EDGs with off-site power. The assistant shift supervisor and shift supervisor performed well, giving proper updated information to the crew, providing good oversight and a questioning attitude.

The inspector noted that this was the fourth time since July 1991, that one or both of the off-site power lines were lost due to improper review of action which could affect the lines. This item is identified as an unresolved item (50-410/92-25-02).

2.2.3 Unanticipated Turbine Foundation Growth

NMPC took adequate measures to maintain the plant in a safe condition following identification of damage to components in the turbine generator exciter. The inspectors reviewed NMPC actions during the event, observed portions of the corrective maintenance, engineering discussions, and post-maintenance testing, and concluded that NMPC's initial actions and the corrective action plan were satisfactory. On August 28, while rolling the turbine for startup, sparks and smoke were observed near the generator exciter housing. The station shift supervisor quickly assessed the problem and ordered the turbine to be tripped. Initial investigation revealed that the exciter brush cooling fan had been in contact with its bakelite housing, causing the bakelite to heat-up and smolder. NMPC contacted the vendor, developed a comprehensive inspection and repair plan, and proceeded to cold shutdown. Further investigation revealed that a journal bearing adjacent to the exciter had severe damage requiring replacement.

The vendor determined the cause of the exciter brush cooling fan housing contact and the journal bearing-to-turbine rotor contact was unanticipated turbine foundation growth (the turbine deck). Industry experience has shown that the turbine deck expansion is not fully elastic (i.e., following a cool down the deck will be longer than it originally was). Further, because the turbine deck takes a long time to cool down while the turbine rotor cools down quickly, the problem may be exacerbated. The common vendor practice was to check only radial turbine clearances during outages and assume that the axial clearances would be satisfactory. The last time Unit 2's axial clearances were measured was in 1987.

Because of the investigation, NMPC moved the exciter housing (including the brush components) and adjusted the generator-exciter coupling to establish the original design axial clearances. This corrected the problem, however, additional foundation growth clearances were not added. The foundation growth clearance will be established during the next refueling outage by comparing the present (design) clearances to the as-found clearances at the start of the outage.

3.0 RADIOLOGICAL AND CHEMISTRY CONTROLS (71707)

3.1 Routine Plant Tours - Units 1 and 2

During routine plant tours of both units the inspector noted that radiological conditions were good and that postings were properly followed. However, the inspector did note that contaminated area in the lower levels of the Unit 2 reactor building had increased. This was a direct result of inadequate reactor building floor drain system capacity. This design deficiency caused backups and the spread of contamination during heavy flows to the reactor building sump. This was the case on September 24, when most of reactor building elevation 215 and 175 were contaminated from a floor drain overflow. Such overflows continue to challenge the radiation protection staff, the operators, and other plant personnel who need to enter these areas.

3.1 New Radiation Work Permit Program

NMPC implemented a new radiation work permit (RWP) program on August 29. The purpose of the program is to enable NMPC to better track, account for, and budget personnel radiation exposure. The major change was that an RWP is required for all entries into the radiologically restricted area.

4.0 MAINTENANCE (62703)

4.1 Observation of Maintenance Activities - Unit 1

Electrical maintenance technicians successfully replaced the No. 12 liquid poison squib valve continuity alarm meter relay per work request 206190. This corrective maintenance was identified when a control room annunciator alarmed which indicated the squib valve lost continuity. The inspector reviewed the work package, observed portions of the work, and concluded the technicians performed the maintenance in a controlled and safe manner.

4.2 Observation of Maintenance Activities - Unit 2

4.2.1 Service Water Flow Transmitter Replacement

Instrumentation and controls (I&C) technicians properly bench tested, installed, and calibrated replacement service water flow transmitter 2SWP*FT201B. This transmitter measures the service water flow to residual heat removal heat exchanger "B" for the remote shutdown panel indication. The transmitter was replaced based on the recommendation provided in NRC Bulletin 90-01, "Loss of Fill-Oil in Transmitters Manufactured By Rosemount" to develop and implement a program to replace any transmitters identified by Rosemount as having a high failure fraction due to a loss of fill oil. The inspector observed portions of the bench test and calibration, and reviewed the completed test procedures, work control documents, and quality control inspection report. The inspector concluded that I&C

personnel performed very well during activities associated with the transmitter replacement. Time in the associated technical specification (TS) limiting condition for operation (LCO) was minimized. Supervisory and quality assurance oversight was satisfactory.

During the installation process the I&C technician and the quality assurance inspector questioned whether the detector needed to meet environmental qualification (EQ) standards. The installation paper work showed that the detector was not EQ, however, a similar detector within four inches was tagged as EQ equipment. The QA inspector discussed this concern with maintenance support personnel and determined that the detector was non-EQ, and allowed the installation to be completed.

The inspector reviewed EQ documentation on this transmitter and found conflicting information. The master equipment list stated that the detector was EQ, but for a mild environment. Review of another hard copy EQ database (EQRM) showed the transmitter as non-EQ. The inspector discussed the apparent conflict in EQ information and the mild/harsh environment conflict with the QA and site EQ groups. Subsequently a deviation/event report (DER) was written to resolve the mild/harsh conflict. Based on the deviation/event report (DER), the operations department declared the instruments and their indication on the remote shutdown panel inoperable and entered a seven day shutdown LCO. Engineering resolution of the issue determined that the transmitter was not required to be EQ because it was 10 CFR Part 50, Appendix R, instrumentation (required for post-fire shutdown capability) and did not need to meet design basis accident criteria.

The inspector agreed with NMPC's conclusion, but found that the EQ documentation was confusing and conflicting. NMPC QA had reached the same conclusions in a recent surveillance report of EQ items, dated September 2, 1992. The inspector found that the surveillance was of adequate depth and properly addressed the issues with DERs.

4.2.2 Electrical Troubleshooting on the Division II Emergency Diesel Generator

Electrical maintenance personnel and the system engineer properly performed troubleshooting and repair on the Division II emergency diesel generator (EDG) following inability to synchronize to the grid. While preparing to parallel the EDG with off-site power, to support preplanned maintenance on an off-site breaker, operators did not have voltage control from the control room. The EDG was shut down and troubleshooting initiated. Operations personnel suspected that the automatic voltage regulator (AVR) had failed to the emergency mode since the generator output remained at 4160 volts (the emergency mode setting) when the AVR was manipulated in the test mode. In this condition the EDG retained its ability to power the loads necessary to bring the plant to a safe shutdown condition following a loss of coolant accident (LOCA) and loss of off-site power, but was unable to be manually synchronized to its emergency bus. The system engineer postulated a failed AVR K1 relay, which was subsequently confirmed by electrical troubleshooting. The K1 relay, manufactured by Potter Brumfield, was replaced and a DER was initiated to identify the failure mechanism. The inspector reviewed the work control documentation, including the troubleshooting plan

and lifted leads log, observed portions of the troubleshooting, retest, and the technical specification required operability testing of the redundant EDGs. The inspector concluded that Unit 2 personnel responded very well to this situation; they quickly identified the problem and returned the affected EDG to service, demonstrated the proper safety perspective by immediately testing the redundant EDGs, and displayed excellent system knowledge.

4.2.3 Redundant Reactivity Control System Maintenance

I&C technicians and operations personnel properly responded to and corrected a failed high power input/output optical isolator card used in the end-of-cycle recirculation pump trip circuitry for the redundant reactivity control system. The inspector observed various portions of the system repair, including the control room maintenance brief, card replacement, and post-maintenance testing. Procedural adherence, TS conformance, and excellent system knowledge were demonstrated and observed.

5.0 SURVEILLANCE (61726, 61707)

5.1 Observation of Surveillance Activities - Unit 1

The inspectors observed and reviewed part of the following surveillance tests to assess technical specifications and procedure conformance, system/equipment removal and restoration from service, test results review, and deficiency resolution.

-- Operations personnel properly conducted the operability verification for the liquid poison system loop 12. The pump developed a sufficient discharge flowrate. In-service testing personnel successfully operated the portable flow measuring device (controllatron) to determine the flowrate. The surveillance specified the performance of an in-place calibration of the controllatron prior to use which was successful in providing accurate data.

-- Operations personnel properly conducted the core spray system pump 121 operability test. The discharge flowrate and vibration data was acceptable. The reactor operator running the test identified a deficiency in the test procedure in calculating the flowrate. A procedure change evaluation was performed to correct the deficiency. The inspector considered the operator performed well and demonstrated good procedural adherence.

6.0 ENGINEERING AND TECHNICAL SUPPORT (71707, 92703, 37700)

6.1 Review of Emergency Condenser Thermal Cycling Data - Unit 1

The inspector reviewed a sampling of the temperature data from the thermocouples installed on the emergency cooling system condensate return lines. The temperature data was relatively constant with only small levels of thermal cycling. NMPC evaluation of this data will be factored into future modifications to the condensate return line check valves.

6.2 Containment Vent and Purge Valves - Unit 2

During the previous inspection period NMPC made commitments to NRC management involving testing of the resilient seat primary containment vent and purge valves. During the shutdown beginning on August 28, NMPC performed maintenance on the suppression pool purge isolation valves to correct difficulties during leak testing. NMPC, following this work, made commitments to perform a purge through these valves and to perform a leak rate test prior to reactor startup. Also, NMPC committed to leak rate test these valve following inerting the containment. These tests were completed properly, with leak rates within the technical specification limit. NMPC also continued their commitment to testing all the drywell and suppression pool vent and purge valves after use.

7.0 SAFETY ASSESSMENT AND QUALITY VERIFICATION (71707, 92700)

7.1 Review of Licensee Event Reports (LERs) and Special Reports

7.1.1 Unit 1

The inspector found the following LER satisfactory:

LER 92-09, dated September 8, 1992. Reactor scram caused by failure of a local power range monitor (LPRM) detector. A contributing factor to the cause of the scram was that the LPRM had spiked about four hours earlier and it was not removed from service. NMPC issued a lessons learned transmittal which emphasized the importance of bypassing LPRMs which spike, if permitted by technical specifications. Also, a LPRM log was implemented to help trend spiking problems. The inspector found the corrective actions taken were appropriate to prevent recurrence.

7.1.2 Unit 2

The inspector found the following Special Report and LERs satisfactory:

Special Report, dated September 14, 1992. Main stack effluent monitoring instrumentation inoperable for greater than 72 hours due to a power supply failure caused by a power surge that resulted from a lightening strike to the plant's main stack.

LER 91-17, supplement 1, dated August 13, 1992. Root cause investigation results for the main transformer fault that caused a reactor scram and subsequent uninterruptible power supply failure that caused a loss of annunciation which led to the declaration of a Site Area Emergency.

LER 92-06, supplement 1, dated June 15, 1992. High pressure core spray EDG service water cooling supply valve isolation logic design investigation results.

LER 92-13, dated June 26, 1992. Inadvertent safety relief valve actuation in the automatic depressurization mode caused by personnel error during maintenance.

LER 92-14, dated July 7, 1992. Reactor scram signal and numerous engineered safety feature actuations, due to the spurious tripping of the Division I electrical protection assemblies.

LER 92-15, dated August 3, 1992. Reactor core isolation cooling system isolation due to a procedural deficiency.

LER 92-18, dated August 27, 1992. Partial loss of off-site power and subsequent engineered safety features actuations caused by personnel error during off-site breaker maintenance.

7.2 Review of 10 CFR 50.59 Safety Evaluations Process - Units 1 and 2

The inspector found that NMPC was implementing an effective 10 CFR 50.59 safety evaluation process. The inspector reviewed NMPC's safety evaluation procedure NIP-SEV-01, numerous evaluations, personnel qualifications, and an internal NMPC audit of the program.

The inspector reviewed the following safety evaluations that supported changes to Unit 2:

-- Safety Evaluation No. 90-612, Recirculation Flow Control Valve Position During Pump Transfer

-- Safety Evaluation No. 90-310, Temporary Modification to Defeat the Jacket Water High Temperature Shutdown Valve

-- Safety Evaluation No. 91-012, Disable Automatic Turbine High Vibration Trip

-- Safety Evaluation No. 91-020, In-line Ion Chromatograph

The inspector agreed with NMPC's conclusions that the proposed changes addressed by these safety evaluations did not involve unreviewed safety questions. The discussion in each safety evaluation was commensurate with the potential safety significance of the proposed change, allowing the inspector to understand readily the bases for conclusions. The safety evaluations had received Site Operations Review Committee (SORC) and Safety Review and Audit Board (SRAB) reviews, as required, and necessary changes to the USAR had been identified.

Section 3.0 of procedure NIP-SEV-01 required that preparers, reviewers, and approvers of 10 CFR 50.59 safety evaluations be qualified by the completion of safety evaluation training and the performance of a practical examination. This procedure also required that qualified individuals be identified on a list of qualified safety evaluation reviewers and participate in requalification training every two years. The inspector found the training material used in the most recent safety evaluation training sessions was comprehensive including workshops and a practical examination. The cognizant licensing engineer advised the inspector that these training sessions lasted between one and a half to two days, depending on the backgrounds of participants. The inspector also reviewed the most recent list of qualified safety evaluation reviewers that was dated March 18, 1992. The inspector confirmed that such a list had been prepared and distributed to appropriate members of the NMPC staff for their use.

Section 2.2 of procedure NIP-SEV-01 required that the NMPC licensing organization perform a semi-annual audit of safety evaluations and provide the results to vice-presidents, SORC, SRAB, and plant managers. This procedure indicated that the audit should focus on the adequacy of the responses to questions asked in the safety evaluations. The inspector discussed this initial audit, performed in late July 1992, with the cognizant supervisor and learned that the final audit report had not yet been approved and issued. However, the audit

findings indicated that about 23 and 17 percent of the safety evaluations performed in Units 1 and 2, respectively, since February 5, 1992, were reviewed. Predefined attributes were used to evaluate the safety evaluations. The audit found that the level of detail provided in safety evaluations was generally excellent. Based on the discussions of the findings, the inspector concluded that the involved individuals were well qualified to perform the reviews and that the audit represented a significant manpower commitment by NMPC.

In summary the inspector found that the safety evaluation process was functioning properly. The evaluation reviews were satisfactory. The training provided to evaluators was meaningful and comprehensive. The audit of the process by NMPC licensing personnel was a very good self-assessment effort.

7.3 Review of Calculations Supporting License Amendment Requests

The inspector reviewed two calculations and concluded that they were adequate to support license amendment requests. The first calculation was associated with a license amendment request for Unit 1 that was submitted by NMPC in a letter dated November 6, 1990. The request was to change the technical specifications to incorporate a revised set point for isolation of the emergency cooling system on high steam flow. The inspector reviewed the NMPC calculation of the differential pressure associated with 300 percent steam flow as documented in Calculation S14-39-F005. The second calculation was associated with a license amendment request for Unit 2 that was submitted by NMPC in a letter dated August 21, 1991. This request was to change the technical specifications to increase the up-travel limit of the main and auxiliary hoists on the refueling platform by 6 inches. The inspector reviewed the calculation of the effect of the increase in this up-travel limit on the whole body dose rate on the refueling platform as documented in Calculation 12177-PR(c)-26-K.

7.4 Review of Work Control Monitoring Program

The inspector noted no discrepancies in the status and completeness of NMPC's Work Control Monitoring Program. NMPC implemented this program as a corrective action in response to the loss of ultimate heat sink event at Unit 1. As explained in their letter to the NRC dated March 11, 1992, NMPC intended to perform surveillances of work control activities once per week at each unit. These surveillances were to begin the week of March 9, 1992, and the QA Department was to be responsible for facilitating and administering this program. In a letter to the NRC dated July 23, 1992, NMPC advised the NRC that the work control process and procedures were being streamlined and simplified. Beginning in August 1992, surveillances of work control activities were to be performed at each unit monthly pending the completion of process and procedure changes and related training. NMPC further stated in the July 23 letter that QA surveillances of work control activities would be subsequently increased to two per month per unit.

The inspector reviewed Rev. 1 of the Work Control Monitoring Program Plan dated June 5, 1992. This plan indicated that work control surveillances were to include the

following areas:

Work Request Initiation
Work Request Planning
Station Shift Supervisor Impact Review and Approval
Work Request Implementation
Post Maintenance Testing
Work Request Technical Review
Troubleshooting
Work Request Review of Completed Work
Work Request Changes
Emergency Work Requests
Work Request Closeout
Voided Work Requests

The inspector subsequently reviewed reports for the surveillances that have been performed to date at Units 1 and 2. The Unit 1 surveillances were identified with Report Nos. 92-15000 through 92-15020. The Unit 2 surveillances were identified with Report Nos. 92-23001 through 92-23020. The inspector noted that senior management had routinely participated in these surveillances as team members. It was also observed that work control monitoring surveillances had been performed at the frequencies described in related correspondence to the NRC. The areas that were reviewed in the surveillances were consistent with the requirements of the program plan.

The work control monitoring surveillances resulted in the identification of what were described as findings and opportunities for improvement. The findings were documented on DERs. Although not documented on DERs, the opportunities for improvement were documented, tracked, and reviewed as part of the work control monitoring effort. The inspector noted that the surveillances did reflect an improving trend in the quality and completeness of work packages, as evident by fewer findings in the more recent surveillances. The Unit 1 surveillances resulted in the identification of 58 findings and the Unit 2 surveillances resulted in 35 findings. Most of the findings related to process type problems. A smaller portion of the findings were related to personnel performance problems. In view of the surveillance findings, the inspector considered NMPC's current emphasis on the streamlining and simplification of the work control process and procedures to be appropriate.

8.0 MANAGEMENT MEETINGS

At periodic intervals and at the conclusion of the inspection, meetings were held with senior station management to discuss the scope and findings of this inspection. Based on the NRC Region I review of this report and discussions held with Niagara Mohawk representatives, it was determined that this report does not contain safeguards or proprietary information.